SPACETECH IN GULF

# Space Industry in Saudi Arabia:

## Current Trends and Perspectives

هيئة الاتصالات والفضاء والتقنية
Communications, Space & Technology Commission

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Earth Observation Solutions

First Edition
KSA, 2025

Dear Space Enthusiasts,

We are happy to present our first magazine, *"Space Industry in Saudi Arabia: Current Trends and Perspectives."* This publication marks the first comprehensive look at the space industry in Saudi Arabia, and we are proud to lead the way in bringing this paper to life.

We extend our heartfelt thanks to the Communications, Space & Technology Commission (CST) and all our contributors for their invaluable support and insights.

Please don't hesitate to let us know if you spot any errors or typos. We welcome your feedback to help make this a valuable resource for our growing space community.

Stay tuned for more!

Best regards,
SpaceTech in Gulf team

SPACETECH IN GULF

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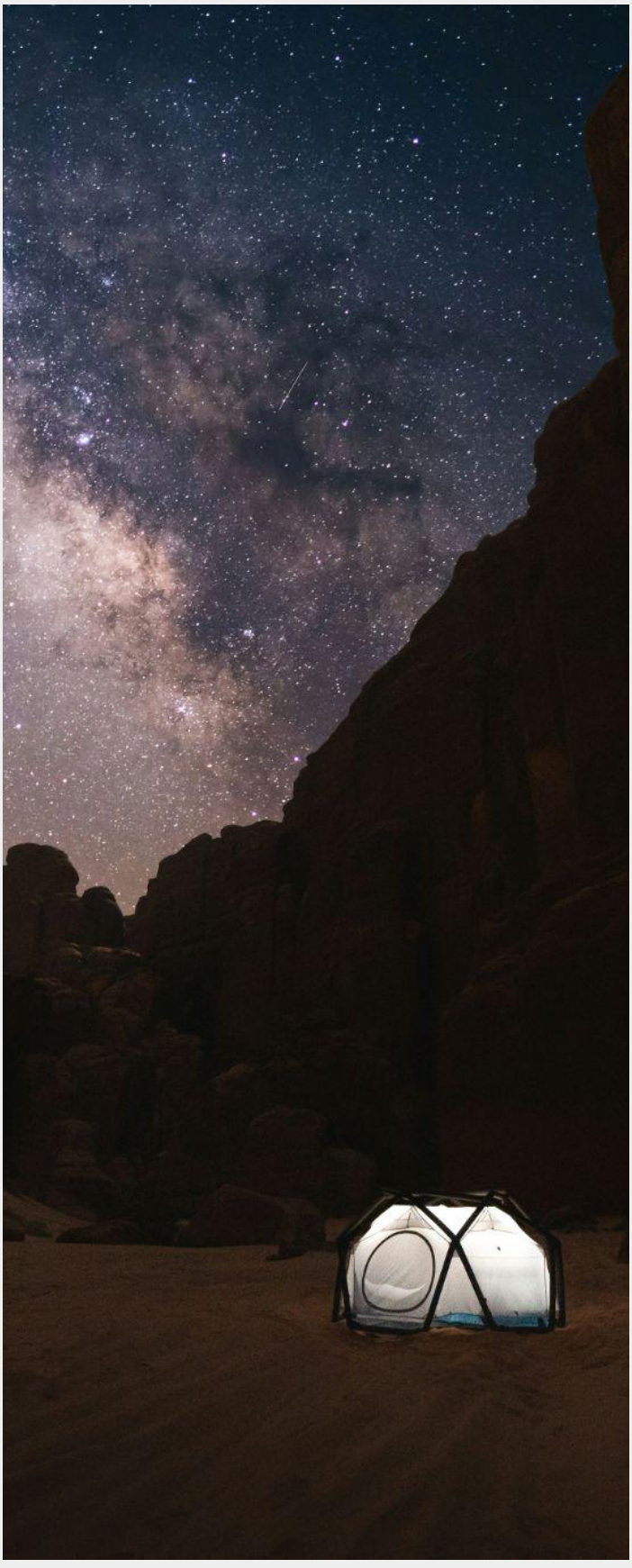
# Foreword



## About this Magazine

The purpose of this Magazine is to analyze Saudi Arabia's emerging space industry ecosystem. We aimed to compile a comprehensive list of entities involved in the Saudi Arabian space industry, directly or indirectly. This ranges from those directly engaged in space technology development to satellite communications departments. This report serves as a starting point, with the vision to continuously gather more data and insights, capturing the evolving landscape of the Saudi Arabian space ecosystem. Subsequent editions will build upon this foundation, offering a dynamic view of Saudi Arabia's contributions to the global space arena. Our aim is to contribute to a thorough understanding of the Saudi Arabian space industry, aiding informed decision-making and fostering growth in this promising frontier.

## SpaceTech in Gulf

SpaceTech in Gulf has solidified its position as the leading analytics and space market intel company in the Middle East and North Africa (MENA) specializing in strategic communications and market intelligence within the space domain.

With a particular focus on the MENA region, the company offers expertise and insights into the unique challenges and opportunities that exist within this rapidly evolving sector. By leveraging its extensive knowledge and network, SpaceTech in Gulf helps its clients navigate the complexities of the SpaceTech landscape and develop successful business strategies that drive growth and innovation.

Contact us to learn more about how we can help you achieve your goals in the SpaceTech industry.

**Email: info@spacetech-gulf.com**

# Space Industry in Saudi Arabia

## 300+ Organizations

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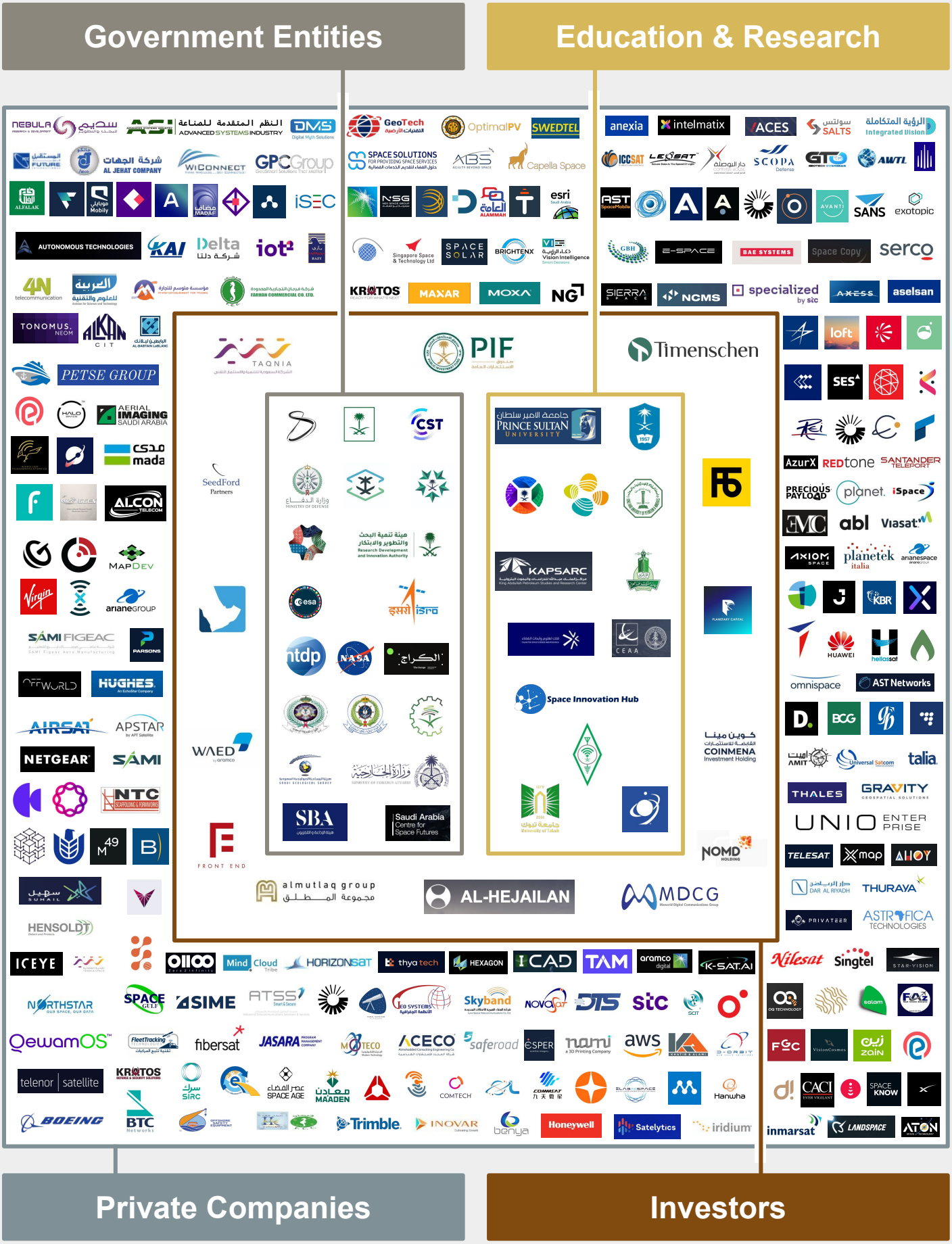
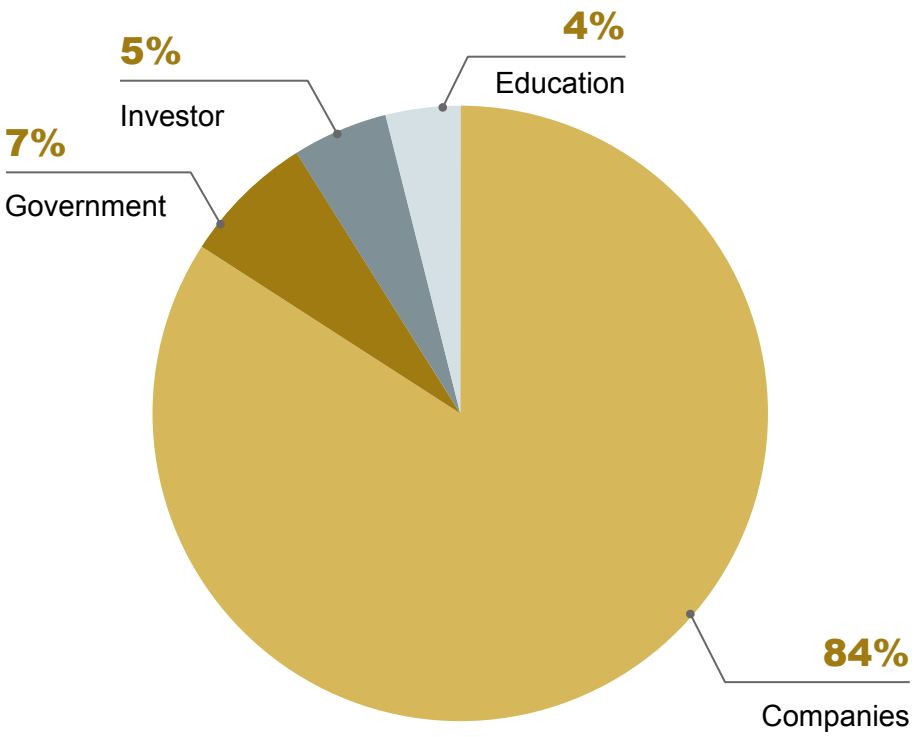


# Saudi Arabia's Space Ecosystem: 300 Key Organizations Driving Growth

The Saudi space industry is predominantly fueled by the commercial sector, with approximately 250+ companies actively operating in the country, underscoring significant private sector engagement. In addition, 20+ government agencies contribute to regulation and sector facilitation. The education and research also highlights the involvement of 10+ educational and R&D institutions and 15 investment bodies, reflecting a growing ecosystem focused on research, development, and funding.

## Organizations by Type



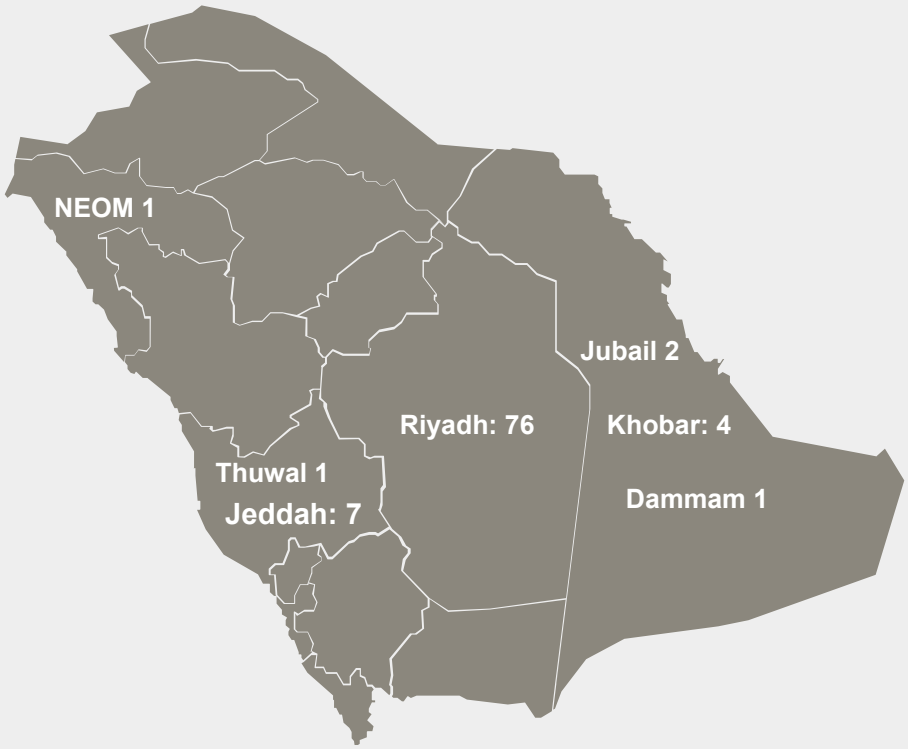

*Saudi Arabia's well-structured space ecosystem is crucial for addressing critical challenges such as environmental monitoring, disaster management, and urban planning. Through the integration of innovative space applications across various sectors, the Kingdom is enhancing national capabilities while fostering economic diversification and technological advancement. By collaborating with government agencies, academic institutions, and the private sector, Saudi Arabia is not only advancing its own space agenda but also contributing to a global vision of sustainability. This commitment ensures that the benefits of space technology positively impact the lives of its citizens and support sustainable development efforts worldwide.*

**Alexei Cresniov, CEO**
**Co-Founder at SpaceTech in Gulf**

# The DIstribution of 110+ Local Entities in Saudi Arabia

The distribution of the 110 Saudi space companies across Saudi Arabia highlights Riyadh as the central hub, with 76 companies based in the capital. This dominance underscores Riyadh's role as the country's primary center for space industry activities, likely due to its proximity to government agencies, research institutions, and funding sources. Jeddah follows with 7 companies, suggesting a secondary cluster for space-related enterprises, while smaller numbers are distributed across cities like Khobar (4 companies) and Jubail (2 companies), indicating emerging interest. NEOM, Thuwal, and Dammam each host 1 company, reflecting potential for future growth as these areas continue to develop their technological and industrial capabilities.

## Country Distribution

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*Saudi Arabia's space ecosystem is undergoing a remarkable transformation, powered by substantial investments, funding opportunities, and strategic international partnerships. In alignment with Vision 2030, the Kingdom is committed to developing a dynamic space industry by nurturing a skilled workforce and empowering SpaceTech startups. Through these ambitious initiatives, Saudi Arabia is positioning itself as a leading player in the global space industry, ready to drive scientific advancements and contribute to economic growth on an international scale.*

**Abdullah AlGharrash, COO**
**Co-Founder at SpaceTech in Gulf**

# Interviews

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هيئة الاتصالات والفضاء والتقنية
Communications, Space & Technology Commission

# Dr. Khalid AlShathri

General Manager of Space Sector Development at Communications, Space and Technology Commission (CST)

**The mandate of the Communications, Space and Technology Commission (CST) has been expanded to include regulation of the Space sector alongside its existing telecommunications and technology mandate. How is this combined know-how proving to be an added value in developing a robust regulatory framework for Space?**

CST has been regulating both the Telecom and the Information Technology Sectors for over 20 years. Adding to its mandate the regulation of Space will significantly benefit the private sector. By leveraging its breadth of expertise and previous regulatory approaches in the Telecom and Technology sectors, CST can develop the clear, business friendly, and efficient Space regulatory framework that the private sector seeks.

CST is also aware that multiple Telecom and Technology players will engage in the Space sector, especially in the downstream segment, such as Satcom and Earth observation (EO). These Telecom and Technology players will work with CST and won't need to go through new regulatory requirements with different regulators. Combining all of the above ultimately results in a smooth engagement, clearer regulations, and more adaptability with in any sector. In the Space sector, private companies have invested in cutting-edge technologies that have and will continue to revolutionize Space capabilities. The Private sector also brings different perspectives and builds a competitive environment that drives innovation. Furthermore, by working hand in hand with government agencies, a diverse and expert Space sector is created.

To fully harness the potential of the Space sector, a strong partnership between the public and private sectors is vital. CST believes this collaboration can promote innovation, attract investments and create a thriving Saudi Space sector. Today, the government can provide supportive policies, adequate infrastructure, and incentives, while the private sector contributes expertise, investments, and market focused solutions. This will allow for attracting global talent while developing local talent, enhancing knowledge transfer ultimately fostering a dynamic, sustainable local Space ecosystem.

As such, CST believes in the cultivation of a robust public-private partnership model for Space development by analyzing opportunities and setting goals and objectives to facilitate collaboration between public and private entities. This collaborative effort is designed to spark innovation and drive progress in Space development. Furthermore, CST is committed to governing these partnerships effectively, regularly evaluating and assessing the partnership model to optimize outcomes and ensure sustained success across all Space sector segments.

**To understand the governance structure of the Saudi Space industry, who are the key stakeholders involved in shaping the Space sector's development in the Kingdom? Could you elaborate on the roles and responsibilities of the Communications, Space & Technology Commission (CST) and the Saudi Space Agency (SSA)?**

In the Saudi Arabian Space industry, there are a number of key stakeholders involved in shaping the sector's development, at the very top we have the Supreme Space Council, which is headed by HRH Crown prince Mohammed Bin Salman, and sitting on that council are decision makers from various entities related to the Space sector. Under the council, there are two main entities; CST, which oversees the sector as the mandated regulator and then there is the SSA, which is implementing the research, development and localization of Space technologies.

Regarding the roles and responsibilities, CST is the regulator responsible for overseeing the Saudi Arabia's Space activities. To that end, CST plays a major role in the development and implementation of legislation, regulation, oversight and monitoring within the Space sector. It also promotes the development of the Space sector by driving investments and cultivating partnerships to promote sector growth and innovation. CST is also supporting Space startups through acceleration and incubation programs that have been developed with the aim of empowering emerging Space startups and entrepreneurs. Furthermore, CST focuses on human capability development by offering specialized training courses in the field of Space sciences and engineering, and supporting scholarship programs to foster talent and expertise within the industry.

The SSA is dedicated to implementing, developing, and localizing Space sciences and technologies. The agency supports civil uses of Space industries and technologies, adopts global applications and best practices in satellite and exploratory missions, and provides expertise and knowledge for applied Space research and science for civil Space purposes. A number of other stakeholders play active roles as well in the Space sector in Saudi Arabia. This includes the King Abdulaziz City for Science and Technology (KACST), King Abdullah University of Science and Technology (KAUST), Saudi Arabian Oil Company (Aramco), Neom, and The Garage. These entities collectively contribute to the advancement of the Space sector in the kingdom through research, development, investment, partnerships and human capital development, aiming to position the Kingdom as a prominent player in the global Space industry.

**How is CST fostering a future generation of skilled Space professionals in Saudi Arabia through educational programs, international collaborations, and support for Space startups? Can you elaborate on specific initiatives in each of these areas?**

An important aspect in developing any sector is the development of talent. Therefore, CST is investing in human capabilities development as part of its efforts in developing the Space sector. This has been done through a number of initiatives, such as the launching of “Madarik” program which aims to develop national capabilities in the Space sector and provide the program participants with the necessary skills and knowledge to excel in the Saudi Space industry. “Madarik” consisted of three main tracks; Space Business, Space Software and Data, and Space Engineering.

On another front, CST has been supporting Space startups through the “Space Tech Entrepreneurship Incubation Program” in collaboration with KAUST and The Garage. The Program aims to develop Startup companies in the field of Space tech, promote national capabilities, attract new investments, support innovation, and expand research and development in the sector. The program is among CST’s efforts in developing a solid infrastructure that supports entrepreneurs, while enabling innovation, supporting national competencies and utilizing international expertise

**Can you please tell what are the main expectations and how CST is going to assist these startups in terms of funding, mentorship, and access to necessary resources like testing facilities or launch opportunities after the program?**

The 6 months Space Tech Incubation program is part of a full-fledged Space Entrepreneurship initiative within CST. This initiative includes 4 key phases; starting with a hackathon that brings together innovators to solve the Space sector’s technical challenges, followed by a training bootcamp to develop solution prototypes in collaboration with experts. From there, qualified participants are enrolled in the incubation phase where they will be supported through benefits such as mentoring, coaching, office space and financial grants to enter the Space market. The final phase of the initiative will see the organization of workshops and hosting of meetups and talks for the maintenance of Space entrepreneurship communities which have been created through the initial activities of the initiative. Throughout the initiative, participants will go through a journey that involves extensive educational programs, mentorship sessions with experts, and access to testing facilities and labs which has all been made possible in collaboration with program partners.

**How is CST fostering international collaborations in the field of Space exploration and technology development, not just on a governmental level, but also by integrating these collaborations into educational programs and support for Space startups? Can you elaborate on any current or planned partnerships that exemplify this approach?**

To leverage both local and international collaboration in its Space sector development aspirations, CST has launched the Space Entrepreneurship Alliance (SEA), which includes numerous international partners. The purpose of SEA is to serve as an umbrella under which entrepreneurship support entities can come together and collaborate on programs and events tailored for the support of Space startups.

The SEA alliance is one of the factors which allowed the Space Tech Incubation program at CST to provide access to excellent expertise through mentors with world-class experience and educational materials from state-of-the-art educational institutions. Furthermore, CST has also collaborated with international education providers in crafting the curriculum of its Space training program “Madarik” to achieve a world class level for the beneficiaries of the training courses. In other domains, CST is working on a number of activities in partnership with international partners that cater to innovators in the Space sector.

**Can you explain the impact of the new Earth Observation (EO) Platform Regulations? How will it streamline licensing procedures and data access for EO companies, and how will these regulations encourage investment and growth within the Saudi EO market?**

CST aims to stimulate the EO market in Saudi Arabia through the recently published “Earth Observation Platform Regulations”. These regulations are designed to grant a single permit to build the platform that will gather and aggregate EO data from multiple EO data providers. The permit was awarded to Neo Space Group (NSG) last July, and with it they will establish a marketplace to seamlessly offer EO data to value-added service providers, apps developers, researchers, and universities.

Moreover, it will enable beneficiaries from public and private sectors to obtain AI based Insights from EO sources, serving various applications in different sectors such as agriculture, environment, logistics, urban planning, and more. The initiative will enable Space activities, encourage investments in the Space sector, and enhance Saudi Arabia's global position.

**Beyond EO, are there any other specific initiatives being undertaken by the CST to promote various segments of the Space industry within Saudi Arabia, such as satellite manufacturing or Space tourism?**

CST is actively engaging in both the upstream and downstream segments of the Space industry. This engagement is achieved through promoting such segments via different initiatives, such as the “Space Tech Entrepreneurship Incubation Program” and the establishment of the Space entrepreneurship Alliance (SEA). CST is also promoting these segments through fostering collaboration and partnerships between global Space players and local champions to enhance capabilities in satellite manufacturing, launch services, and other related activities. Among the main collaborations CST relies on in that regard are those with the National Technology Development Programs’ (NTDP) Relocate and Code Gate initiatives which support foreign Space companies and startups in expanding or setting up their businesses in Saudi Arabia, respectively.

Moreover, CST is currently supporting companies in their ambitions to conduct experiments related to Space tourism. CST is excited to be supporting these companies and hopes to see Saudi Arabia become a regional hub for Space tourism activities in the near future. In doing so, CST aims to position Saudi Arabia as a significant player in this emerging market through the creation of a regulatory environment that stimulates innovation and attracts investments while ensuring safety of personnel and assets.

**What role do you see private companies playing in the future of the Saudi Space industry, and how is CST fostering a strong public-private partnership model for Space Development?**

The private sector is the major contributor to the growth in any sector. In the Space sector, private companies have invested in cutting-edge technologies that have and will continue to revolutionize Space capabilities. The private sector also brings different perspectives and builds a competitive environment that drives innovation. Furthermore, by working hand in hand with government agencies, a diverse and expert Space sector is created. To fully harness the potential of the Space sector, a strong partnership between the public and private sectors is vital. CST believes this collaboration can promote innovation, attract investments and create a thriving Saudi Space sector. Today, the government can provide supportive policies, adequate infrastructure, and incentives, while the private sector contributes expertise, investments, and market focused solutions.

This will allow for attracting global talent while developing local talent, enhancing knowledge transfer ultimately fostering a dynamic, sustainable local Space ecosystem. As such, CST believes in the cultivation of a robust public-private partnership model for Space development by analyzing opportunities and setting goals and objectives to facilitate collaboration between public and private entities.

This collaborative effort is designed to spark innovation and drive progress in Space development. Furthermore, CST is committed to governing these partnerships effectively, regularly evaluating and assessing the partnership model to optimize outcomes and ensure sustained success across all Space sector segments.

*Dr. Khalid AlShathri, Space Sector Development General Manager and Abdullah AlGharrash, Co-Founder of SpaceTech in Gulf*

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LOCKHEED MARTIN

# Retired Brigadier General Abdullah Alajmi

Space Business Development Director for Saudi Arabia at Lockheed Martin

**What is Lockheed Martin Saudi Arabia's strategic vision for the space industry in the Kingdom over the next decade?**

Since 2018, the Kingdom of Saudi Arabia has taken major steps toward becoming a key player in the global space sector, including forming the Supreme Space Council led by HRH Prince Mohammed Bin Salman, Saudi Space Commission (SSC) and then Saudi Space Agency (SSA), and recently PIF announced Neo Space Group (NSG) to be the leading space company in the region.

Lockheed Martin envisions that the Saudi Arabian space industrial base will grow significantly, enabling social and economic development and the advancement of national space capabilities. We are strengthening partnerships with government and commercial entities to support Saudia Arabia's goals, foster the innovation of groundbreaking technologies, and bolster the burgeoning space industry.

**Can you share some of the key space projects in which Lockheed Martin is currently involved within Saudi Arabia?**

Lockheed Martin has been a committed partner to the Kingdom of Saudi Arabia for nearly 6 decades. Today, Lockheed Martin's presence in the Kingdom has moved beyond defense products by delivering diverse systems and services, developing exploration capabilities, and providing technical support and educational expertise. Key space missions we are involved in include:

- **SaudiGeoSat-1**

Lockheed Martin built the first KSA Geostationary Satellite SaudiGeoSat-1 (SGS-1) which has dual payloads for commercial and secure communications system. SGS-1 builds the foundation for a KSA sovereign-controlled, National and Regional Security capability using state-of-the-art technology to increase the utilization of space.

- **Arabsat**

Lockheed Martin built the Arabsat 6a satellite, a high-capacity communications satellite that delivers TV, internet, radio and mobile phone communications services to the Middle East, Africa and Europe.

- **Human exploration**

Lockheed Martin has provided several human exploration concepts to SSA, including LEO Space Station, Lunar Rover, in addition to that space training programs has been discussed to support Space Academy.

Additionally, we are working with customers in the Kingdom of Saudi Arabia to develop future potential space programs.

**What are some of the latest technological innovations that Lockheed Martin has introduced in the Saudi space industry?**

We are pushing the boundaries of scientific discovery to deliver a diverse range of products and capabilities to meet our customers' needs. Our partnership has been expanding over the years and evolved into robust security, technology, space and energy related technology solutions to strengthen the Kingdom's sovereignty.

**How does Lockheed Martin collaborate with local entities, such as the SSA or CST, universities, and private sector companies, to advance space technology in the region?**

Lockheed Martin's knowledge and experience allows us to contribute to the development of in-country skills. Our intent is to partner with local industry and academia by providing opportunities for technology transfer, innovation, local skilled jobs to empower the economy and enable sustainable business growth. Examples of this include:

- The Assembly, Integration & Test On-the-Job (AI&T) Training program is an academic and hands-on training partnership with King Abdulaziz City for Science and Technology (KACST) designed to build qualified talent to support future satellite AI&T of telecommunications satellites. The initiative combines a variety of knowledge-transfer methodologies to deliver a world-class and accelerated AI&T Certification experience via Lockheed Martin materials and subject matter experts.
- This program supported the training of 11 KACST engineers who joined our team in Denver, CO to assist in the assembly, integration and testing of the SGS-1 satellite.
- Lockheed Martin has partnered with KACST and the local prime contractor TAQNIA in the development of the SGS-1 Secure Ground System to support technology transfer and innovation.
- We partnered with King Abdullah Economic City, the MiSK foundation and Babson College to launch an entrepreneurship college, Prince Mohammad bin Salman College of Business and Entrepreneurship (MBSC). This initiative supports the transfer of advanced technologies to the Kingdom and promotes social and economic development.

**How is Lockheed Martin contributing to space technology localization and local talent development in Saudi Arabia?**

Our presence in Saudi Arabia is supported by workforce development initiatives that

encourage and train the next generation of Saudi talent– ensuring the sustainability of the aerospace and defense industry. For example,

- Lockheed Martin's Summer Saudi Arabia Internship Program offers a transformational experience that equips Saudi interns with valuable skills and deep industry insights. Now in its third year, the program continues to bridge the gap between education and industry by providing students with opportunities to apply their classroom knowledge to real-world challenges.
- The company has supported students from universities such as the King Saud University (KSU), Princess Nourah bint Abdulrahman University, and Al Yamamah University through internship programs at its offices in Saudi Arabia. The company also sponsors two Master students at the King Fahd University of Petroleum and Minerals (KFUPM).

  Additionally, we are working with customers in the Kingdom of Saudi Arabia to develop future potential space programs.

**How is Lockheed Martin positioning itself within the emerging commercial space market in Saudi Arabia?**

Our current missions and partnerships make up a foundation for access to new markets and growth opportunities in Saudi Arabia. Along with physical spacecraft, exploration capabilities, and technological solutions, Lockheed Martin plans to continue working with Saudi Arabia across several capacity building programs that empower the region to meet their development goals as they navigate an increasingly complex world.

We plan to continue evolving our role by establishing more government, academic, and industry partnerships to help bring resources and talent from the commercial sector into space, as well as fostering more allied collaboration and strengthening sovereignty. We are committed to helping bolster the space economy, and we are actively working to identify opportunities for systems and capabilities that we can jointly develop in the Kingdom.

**Can you discuss any significant space projects Lockheed Martin is involved in across the Gulf or MENA region and their expected impact on regional space capabilities?**

Lockheed Martin promotes global cooperation and industrial expansion amongst allied nations. The Saudi efforts come at a time were other GCC countries are doing lots of efforts and work in the space field as well, including the UAE, Oman, Qatar, Bahrain and Kuwait.

As a global space provider and mission system integrator, we are postured to support reconnaissance, weather tracking, secure communications and navigation capabilities, amongst other missions. As a longstanding partner to our MENA space customers, Lockheed Martin also offers support and guidance on pathways to join future space exploration missions, such as Artemis.

As an example of regional impacts, we've contributed to EMEA (Europe, Middle East, and Africa) regional communications coverage with the Lockheed Martin-built Arabsat 6a satellite.


**How is Lockheed Martin contributing to enhancing space-based security and defense capabilities for countries in the MENA region?**

As the U.S. continues to build cooperative agreements with its partners on space operations, we know our collective success hinges on all our systems seamlessly working together in the future. Our technologies are a bridge that bring nations together and create opportunities for allies to collaborate and strengthen regional security and prosperity for generations to come.

Examples of Lockheed Martin fostering collaboration include hosting diverse suppliers' workshops and internship programs, developing interoperable capabilities, advocating for doctrine and training to enable coalition architectures and joint, multi-domain operations – all with the goal of creating efficiencies to counter collective regional threats.

SPACETECH IN GULF

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## Mr Garnet Mons

General Manager
of Kratos Arabia Ltd.

**Could you elaborate on the specific space technologies or solutions that your division is currently prioritizing in its development and deployment efforts? Are there any particular areas, such as satellite communications, remote sensing, or space exploration, that are of primary interest?**

Kratos is currently prioritising the development and deployment of our Software-Defined Ground System platform called “OpenSpace”. OpenSpace offers greater flexibility, scalability and cost-effectiveness compared to traditional hardware-based systems. The platform supports capabilities in Satellite Communication, Earth Observation/Remote Sensing as well as Space Domain Awareness.

**What are the key capabilities and applications of the satellite systems that your division is developing or operating? How do these systems contribute to the specific needs and priorities of the Saudi space program?**

The OpenSpace platform prioritizes a standards-based architecture, incorporating industry leaders like DIFI (as outlined by the DIFI Consortium: https://dificonsortium.org/about/).

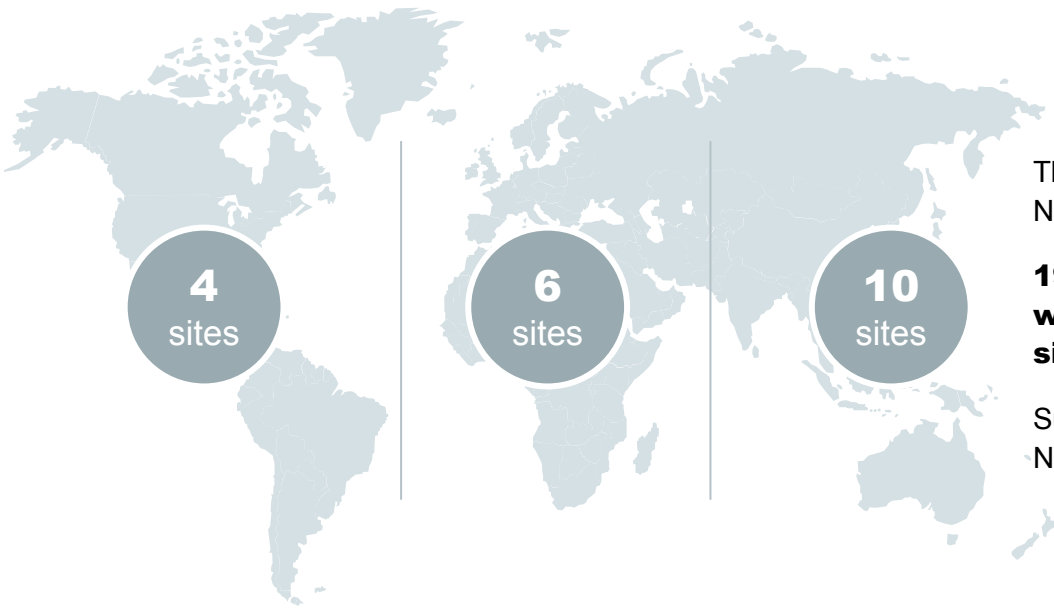
This approach fosters maximum interoperability across systems, reduces development costs, and accelerates time-to-market – all crucial factors for the success of the Saudi Space program.

**How does Kratos contribute to space security and protect critical space infrastructure from potential threats?**

Kratos is a recognized leader in Space Domain Awareness. We have successfully deployed multiple Advanced Space Radio Monitoring Stations for regulatory and military organizations globally. Additionally, we operate the Kratos Global Sensor Network, providing real-time satellite monitoring and tracking capabilities.

**How does your division collaborate with other Kratos divisions or international partners to leverage global expertise and resources in the field of space technology?**

Kratos Arabia represents Kratos Space in the Kingdom of Saudi Arabia, providing comprehensive understanding of the local space industry and its ecosystem. Through strategic partnerships with Saudi industry leaders, integrators, and government entities, Kratos Arabia leverages local knowledge to enhance our international business operations.




The Kratos Global Sensor Network (KGSN):

**190+ RF SDA sensors worldwide across 20 sites.**

Supported by a 24/7 Network Operations Center.

**What partnerships or collaborations has your division established with local Saudi entities or organizations to enhance its operations and impact?**

Kratos has established enduring partnerships with key players in the region, including satellite operators, regulatory authorities, military organizations, local integrators, and network operators. We have provided these entities with a wide range of advanced solutions, such as Spectrum Monitoring, Geolocation, Monitoring & Control, and Satellite Communications, to address their specific needs and optimize their operations.

**Could you elaborate on Kratos' vision for the future of the space industry in Saudi Arabia and how your division aligns with that vision?**

Kratos Arabia, a fully registered Saudi company since 2016, has been actively supporting the ambitious goals of Saudi Vision 2030. We have witnessed remarkable progress in the space sector and are excited to continue contributing to this growth trajectory. By leveraging our innovative solutions and deep industry expertise, we aim to empower the local space industry and drive technological advancements.

**How does Kratos invest in the development of local talent and foster a skilled workforce within the space industry in Saudi Arabia?**

Kratos Arabia employs Saudi engineers to work alongside international delivery teams on local projects. This collaborative approach facilitates significant knowledge transfer, cultivating a skilled workforce that benefits our company, individual engineers, and the wider Saudi Arabian space industry.

*Advanced Space Radio Monitoring Station (ASRMS)*
*Muscat, Oman*

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**52**

…years of leadership in end-to-end satellite ground solutions

**1st**

...to provide a fully virtualized, enterprise level, software-defined ground system

**80%**

...of commercial satellite operators use Kratos products

**60**

...countries on 5 continents with Kratos products in use

**90%**

...of all U.S. space missions employ Kratos solutions

**100's**

...of GEO missions rely on Kratos capabilities

**1000's**

...of multi-missions running daily on Kratos technology

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serco

# Amar Vora

Head of Space
at Serco Middle East

**What is the scope of Serco's involvement in the space industry, and in which specific space sectors does Serco operate?**

We have a strong focus on the space sector, with over 60 years' experience supporting our customers' space missions. As a leading provider of services to governments on an international level, we have a global footprint operating in 10 countries, with over 2,000 space sector employees – and we're proud to playing a significant role more locally in advancing the Middle East's space sector.

As a service integrator, we're able to add impact at every point of the space value chain. Upstream, we have teams of technical and non-technical subject matter experts embedded into space agencies, designing and delivering space programmes across all domains, such as space exploration, Earth observation, satellite communications, and downstream applications. Our teams also support space agencies with satellite testing and launch integration, for example.

On a midstream level, we have strong expertise in satellite operations, including telecommand, satellite control, and flight dynamics, leading the operations of ESA and EUMETSAT satellites. In addition, we provide ground infrastructure management services, from network operations, facilities management, through to ground segment engineering. Testament to this is that our team recently supported with the monitoring of ground services, maintenance and operations of IT systems and control room infrastructure for ESA's Jupiter Icy Moons Explorer spacecraft.

We also have teams deployed supporting government space situational awareness services, providing radar and optical engineering support, operations and maintenance, and orbital analysis – in fact, our teams track over 25,000 space objects daily.

Finally, we also provide services in the downstream segment; we have managed the world's largest Earth observation data access hub with over 55 petabytes of data, 700,000 users, and 65 million images – which has provided incredible insight, enabling governments and organisations to make faster, more informed decisions.

Currently, we are leading the implementation and operation of the Destination Earth Service Platform (DESP) – a geospatial platform management and data management service, acting as the access point to the European DestinE digital twin Earth, providing applications, models, and simulations for better decision-making.

**Could you elaborate on Serco's role in supporting space missions, from concept development to mission operations?**

Absolutely! When it comes to space missions, we provide subject matter expertise into space agencies and partner organisations, supporting them with the design, development and implementation of space missions.

Furthermore, we provide end-to-end spacecraft operations-as-a-service. For example, for the ESA European Space Operations Centre, we are responsible for supporting space operations for the Copernicus satellite family, the world's largest and most ambitious Earth observation programme, providing management, flight operations, real time operations, data systems engineering, flight dynamics, and collision avoidance services for the constellation.

**How does Serco collaborate with other space industry players, both public and private, to achieve its goals?**

Collaboration is in our DNA at Serco. When it comes to the space sector, as a prime service integrator, we almost always collaborate with other industrial partners to design, develop, and implement the service provision to our government clients.

For example, take the Destination Earth Service Platform contract. We are leading a consortium made up of 12 other companies to deliver the open and scalable solution into the European Space Agency and the European Union. In doing so we are leveraging our capabilities and expertise and collaborating with other industry players to provide the best possible value to our clients.

**What are the key challenges Serco faces in the space industry, and how does the company address them?**

Although the space industry presents immense opportunities, it's not without its challenges. In the Middle East specifically, we face skills shortages – despite it being a very exciting and rewarding career, there is not enough talent coming through at the moment. There are many roles when it comes to space – from engineering to operations – and it's an incredibly rewarding career in an exciting industry. To help address this, we launched our Space Academy globally in October 2024, following the success of our initiative in Saudi. In the Kingdom, our Academy has already gotten off to a great start – and we were pleased to welcome Sarah AlHabbas, our first successful graduate to our team earlier this year.

Other challenges we face include the need for greater stakeholder engagement and a lack of market awareness. To help address this, we need to ensure we have the right structure in place to train and develop individuals. We need to building relationships with stakeholders to understand their pain points, and focus on collaboration through a robust network of partners, both locally and internationally, to deliver innovative, cost effective, and impactful services to our clients.

**What is Serco's vision for its role in the burgeoning space industry in the Gulf region?**

The space industry in the Gulf region has immense potential, especially in the UAE and Saudi – where there have been significant strides forward, with both countries investing heavily in its space capabilities as they recognise the economic opportunities for becoming space hubs.

Space agencies in the Gulf region have significant ambitions to cement their position across the international space sector. But to fully realise these ambitions, there is a clear need for private sector support and international collaboration to build these capabilities.

That is why we are looking to localise our international expertise, train nationals, and deliver operational services to realise these national visions, bringing them to life.

**Are there any specific space-related projects or partnerships that Serco is currently pursuing or considering in the Gulf region?**

Yes, we are actively working on bringing our Serco's Space Academy into the region to announce on this soon.

We are also bringing in operational subject matter expertise to support national champions in delivering the region's national space programmes – again, more details to be announced soon.

**How does Serco plan to contribute to the development of a skilled space workforce in the Gulf region?**

We are very much committed to building a skilled space workforce in he region. Testament to this is the several programmes we have.

Our first graduate, Sarah Alhabbas, has been through a robust theoretical and hands-on experience programme, spending six months at our facility in Germany, supporting spacecraft operations for the European Copernicus programme. She has now obtained her Spacecraft Operations Engineer certification, which is recognised by the European Space Agency, and she is bringing this knowledge and expertise back with her to Saudi as she commences her fulltime role.

Secondly, we recently launched the global Serco Space Academy, which we're very proud of. These are short courses covering the entire space value chain, delivered by our international space experts with decades of operational experience. We plan to deliver this academy locally in the region, tailoring this to the requirements of individuals or organisations.

**What role does Serco envision for itself in supporting satellite communications, remote sensing, or other space-based services in the region?**

Globally, we have experience in delivering milsatcom operations – including supporting the operations of secure Satcom assets, providing network operations and maintenance, and delivering ground segment engineering.

In remote sensing, as mentioned previously, we have significant services in operating such satellites as well as their ground segment, and also in processing, managing, and disseminating EO data. We also forge credible partnerships for onboarding, integrating, developing, and operating innovative AI-enabled geospatial applications, supporting a range of different use cases, including environmental, agriculture, urban development, etc.

Moving forward, we would like to deliver the full spectrum of these services within the region in partnership with key public and private sector partners, as the need is there to meet the ambitions of the national space strategies.

**How does Serco plan to address the challenges of space debris and sustainability in its space-related operations in the Gulf?**

As a signatory of the ESA Statement for a Responsible Space Sector, we are committed to contributing to the long-term sustainability of space projects, geared towards a more socially and environmentally responsible space sector. Whilst this is an ESA initiative, this commitment spans our global space operations, including that of the Middle East.

**How does Serco see the role of public-private partnerships in driving the growth of the space industry in the Gulf?**

Government collaboration with the private sector is essential to enable the growth of the space sector in the region. Rapid prototyping, acceleration of innovation, improvement of cost effectiveness, creation of a competitive market, and economic growth are just some of the benefits realised through such partnerships.

As a private company that is focussed on delivering public programmes, we have first-hand experience on the importance of PPPs in developing the space sector and delivering benefits to the public.

**How does Serco assess the potential for space technology applications in addressing regional challenges such as climate change, disaster management, and border security?**

Space technology has a great role to play when it comes to addressing the effects of climate change.

For example, our Urban Twin Solution was developed alongside technology and data partners, addressing a key need in the region for sustainable urban planning, driven by space-enabled environmental data.

This solution provides a complete 360-degree environmental overview and monitoring, which is underpinned by the latest state-of-the-art Earth observation data. This enables governments to activate evidence-based decision-making when it comes to climate change, disaster management and broader security issues. From an environmental standpoint, this tool can support baseline assessment on mangrove ecosystems, provide information and forecasting on extreme weather events to enable better urban planning, and providing suitable locations via satellite imagery for new wildlife ecosystems.

With 50% of essential climate variables only measurable from space, we must look to the invisible infrastructure of the skies for mitigating the effects of climate change.

SPACETECH IN GULF

فلك لعلوم وأبحاث الفضاء
FALAK FOR SPACE SCIENCE AND RESEARCH

# Ayoub Alsubehi

The Founder,
Vice Chairman
at Falak for Space

**What inspired the establishment of FALAK, and what gaps does it aim to address in the Arab world?**

The establishment of FALAK: Sciences and Space Research was inspired by a passion for space exploration and the need to address several gaps in the Arab world, particularly the lack of accessible Arabic content in space science. As regional investments in space initiatives grow, it became evident that community-driven efforts could complement government programs by fostering education, research, and public interest. FALAK aims to inspire scientific curiosity, provide hands-on research opportunities, and develop local talent to contribute to the region's knowledge economy. By bridging the gap between global advancements and the Arab community, FALAK seeks to ensure meaningful regional participation in space exploration while empowering future generations of scientists and innovators.

**How does FALAK raise awareness about space sciences, and what strategies have proven most effective?**

Raising awareness about space sciences through FALAK involves a multi-faceted approach, focusing on education, engagement, and community involvement. We leverage social media platforms to share accessible and engaging content in Arabic, simplifying complex space topics to spark interest among diverse audiences. Collaborating with schools, universities, and cultural institutions has been crucial in organizing events, workshops, and talks that connect people directly with space science. Interactive activities, such as virtual reality experiences and exhibitions, have proven particularly effective in capturing public attention. Additionally, building partnerships with national and regional space agencies helps amplify our reach and credibility. Our strategy centers on creating relatable content, nurturing curiosity, and offering hands-on experiences that make space science exciting and accessible to everyone.

**How has space science contributed to other fields like medicine, cybersecurity, and IT, and how does FALAK highlight these connections?**

Space science has made significant contributions to fields like medicine, cybersecurity, and IT by driving technological innovation and providing new research opportunities. In medicine, advancements such as remote health monitoring, telemedicine, and drug development have benefited from technologies initially designed for space missions. Cybersecurity and IT have also evolved through the development of secure satellite communications and data encryption methods used for space exploration. FALAK aims to highlight these contributions by showcasing the real-world applications of space technologies through educational programs, research collaborations, and public outreach initiatives. By sending payloads to space, FALAK provides hands-on opportunities for researchers to test technologies in microgravity, demonstrating the potential impact of space-based experiments on Earth-bound industries, while inspiring innovation and interdisciplinary learning.

**Could you tell us about some of the programs and events that FALAK organizes to engage youth in space sciences?**

FALAK organizes a variety of programs and field events designed to engage youth and foster interest in space sciences. A key initiative is the Falak Enrichment Program, this year will in collaboration with the Saudi Space Agency, which offers workshops, hands-on activities, and mentorship to inspire young participants. Another flagship initiative is the Falak Research Program, which a great link between mentors from top universities worldwide and maintains a highly competitive acceptance rate of less than 0.3%, giving exceptional students the opportunity to engage in cutting-edge space research. Additionally, FALAK runs the "4D Sessions," an open talk series where experts and enthusiasts discuss space science topics, fostering dialogue and curiosity. These programs, combined with exhibitions, space camps, and field visits, provide immersive learning experiences, making space science accessible and engaging for youth while building a community of future leaders in the field.

**What are some of the recent milestones FALAK has achieved, and what are the organization's goals for the future?**

FALAK has recently achieved significant milestones, including gaining access to send payloads to the International Space Station (ISS), marking a major step in advancing space research and experimentation capabilities. Additionally, since its establishment, FALAK has impacted over 45,000 beneficiaries across Saudi Arabia through its educational programs, research initiatives, and outreach events. These accomplishments reflect the organization's commitment to fostering a deeper understanding of space sciences and creating opportunities for students, researchers, and the public.

Looking ahead, FALAK aspires to expand its research collaborations with international universities and space agencies, increase youth participation in space-related careers, and position itself as a leading non-profit in the global space sector. The organization aims to send more innovative experiments to space, launch additional educational programs, and further strengthen public awareness about the importance of space technologies in improving life on Earth.

**In what ways does FALAK support secondary-level students interested in pursuing careers in space sciences?**

FALAK supports secondary-level students by providing them with resources and experiences that introduce space-related university majors and career pathways. Through interactive workshops, field trips, and educational programs like the Falak Enrichment Program, students gain exposure to various disciplines, including space science, engineering, and astronomy. FALAK also collaborates with universities and industry professionals to offer mentorship sessions, where students can explore academic requirements and career prospects in space-related fields. Additionally, initiatives like the "4D Sessions" allow students to engage with experts and learn about real-world applications of space technologies. By fostering curiosity and providing guidance, FALAK helps students make informed decisions about pursuing higher education and careers in space science and related industries.

**What advice would you give to young people and aspiring space professionals?**

My advice to young people and aspiring space professionals is to stay curious, persistent, and proactive in their learning journey. The space sector is vast and interdisciplinary, so it's essential to explore various fields, such as engineering, astronomy, medicine, and data science, to find your niche. Networking and collaboration are also crucial—connect with experts, participate in internships, research projects, and competitions, and engage with organizations like FALAK that provide opportunities to contribute to space science. Stay updated with the latest developments, and don't hesitate to take on challenges or explore unconventional ideas, as innovation often drives progress in this field. Most importantly, embrace failure as part of the learning process, remain passionate about making a difference, and remember that every contribution, big or small, plays a role in advancing humanity's journey into space.

**How can the non-profit sector advance space sciences in the MENA region, and what role does FALAK play in this?**

The non-profit sector can play a crucial role in advancing space sciences in the MENA region by filling gaps in education, public awareness, and research. Non-profits can focus on creating accessible educational programs, fostering interest among youth, and encouraging them to pursue careers in space-related fields. They can also collaborate with universities, space agencies, and private companies to offer research opportunities, internships, and hands-on experiences that build local talent. Public engagement initiatives, such as space exhibitions, community outreach, and open talks, can help raise awareness about the importance of space technologies in addressing regional challenges. Additionally, non-profits can advocate for policy changes that support investment in space research and foster partnerships across borders. By mobilizing resources, expertise, and networks, the non-profit sector can create a thriving ecosystem that contributes to the MENA region's active participation in the global space industry.

**What are FALAK's long-term goals, and how does the organization plan to become a leading space science hub in Saudi Arabia and the MENA region?**

While some details about future plans remain confidential, what is certain is that FALAK's primary goal is to become the first destination for anyone seeking knowledge about space applications in Saudi Arabia and to rank among the top 10 space organizations in the MENA region by 2034. To achieve this, FALAK aims to expand its educational programs, research collaborations, and public outreach initiatives. The organization plans to enhance partnerships with local and international institutions, offering more hands-on experiences and research opportunities. By leveraging innovative technologies and engaging with a broader audience through both physical and digital platforms, FALAK is committed to making space science accessible and fostering a culture of exploration and innovation throughout the region.

SPACETECH IN GULF

madridspace

# Patricia Martinez

Business Development Manager at Madrid Space

Welcome to our exclusive interview with Madrid Space, a pioneering company in the realm of thermo-structural engineering for space applications. Known for their innovative approaches and in-depth understanding of system behavior, Madrid Space has carved a niche by delivering highly optimized thermal and structural solutions. Their commitment to enhancing system performance by characterizing responses from thermal and structural perspectives sets them apart from competitors, ensuring peak functionality across optical, electrical, and mechanical systems.

**What sets Madrid Space apart from other companies offering thermo-structural engineering services for space applications?**

The value we add on in-depth understanding of a system. Only knowing well how a system behaves and responds it is possible to optimize its performance. Our contributions focus on that system characterizing those responses from a thermal and structural point of view in order to feed back the system functionality and ensure optimum (optical, electrical, mechanical) performance

**Can you elaborate on the specific types of heat pipe solutions you design and develop using additive manufacturing?**

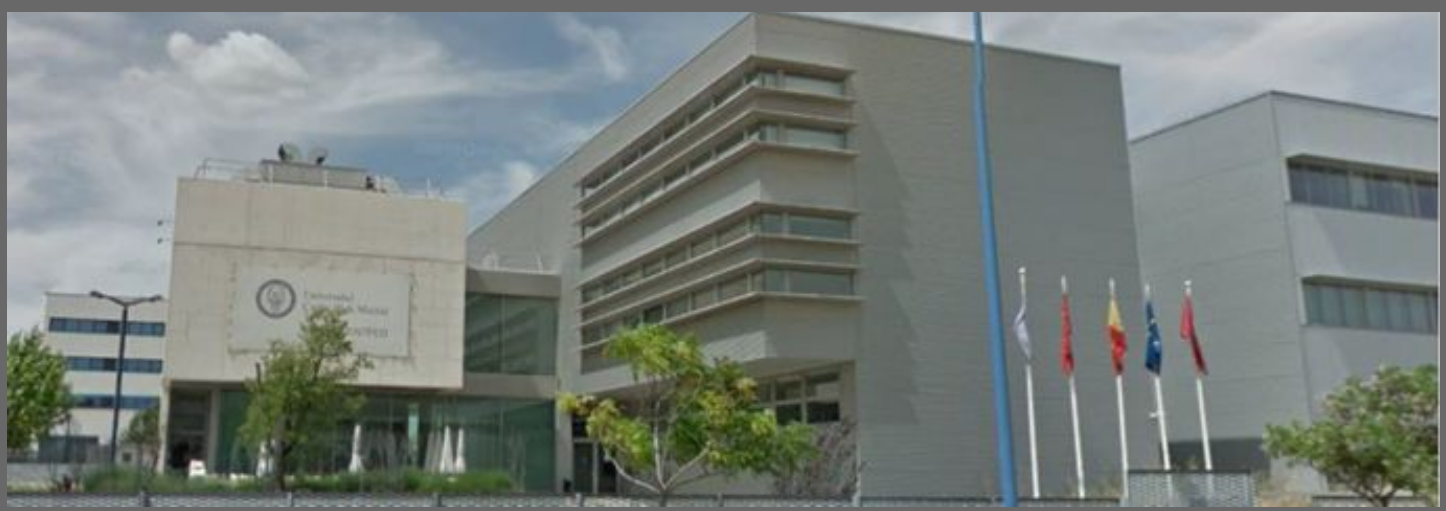
Our key differentiating points are: thermal control INTEGRATED within the equipment optimized structure, leading to both OPTIMAL structural and thermal performance. This leads to 15-25% less launch costs and to 20-47% increase of the equipment value due to the increase of power throughput enabled by our technology. Our manufacturing process allows implementing complex geometries and producing frame and heat pipes in one-go, significantly reducing assembly and integration effort.

**How does Madrid Space's expertise in both thermal and structural engineering allow for a more optimized design approach for space systems?**

On the structural front, one of our niche expertise is designing for vibrations while minimizing weight. We can provide our customers with significant weight reduction on their structural systems (brackets, frames, robotic arms, antenna structures) while ensuring they will survive the demanding loads of the launch event. This translates directly into launch cost reduction for them and/or in ensuring the adequate structural integrity of their system.

On the thermal front, temperatures are often a limiting operational aspect. From solar array drive mechanisms and (motor) actuated systems to high power telecommunication systems or antennae, they all benefit from adequate heat management. By designing for and evaluating the orbital (sun, Earth IR, albedo) and internal heat loads, we make sure that no hot-spots will occur and ensure longer operational duty cycles are possible.

The combination of these two fields is actually the end goal of many of our projects: to ensure thermo-elastic stability, critical in applications such as laser communication terminals or robotic arms and actuators.



**Can you describe the typical workflow for a project with Madrid Space, from initial client needs assessment to final hardware delivery?**

Of course! Besides the administrative aspects (NDA and so on), technically it works like this:

1. System and inputs study, through a first technical meeting to fully understand the system and the need. We explain the information we would require to come up with a certain design or to perform a particular type of analysis (e.g. requirements specification , description of the system operation, materials, power, orbit, attitude, etc.). In case that not all the information is directly available we can propose defining both inputs and scope to best help the system functionality from a thermo-mechanical point of view. We then agree with our customer the type of sizing analysis needed for the system in particular (e.g. sizing thermal cases for high power systems, accurate thermo-elastic assessment for delicate optical instruments, fatigue calculations, etc.)
2. We provide a quote and agree on a timeline and contractual deliveries
3. Once there is good common understanding, we get to the actual design, analysis and optimization work, keeping regular communications with our customer and working together with their technical teams in case of iterative or co-engineering processes.
4. Once a design is frozen and agreed, we can manage the manufacturing process and interact with the respective suppliers. In cases in which the object of the work is a test campaign, we interact with the facilities and/or laboratories to plan and execute the test.
5. The delivery ends up with either documentation and design insights (feedback, implementation), hardware items, mathematical models and/or the analysis/correlation of test data, depending on what has been agreed initially. We are happy to present the results and justify the design choices to the respective authority if required.

We are proud of building long-lasting and trustworthy relationships with our customers, leading to us being involved on complete developments from concept to flight.

**You've been involved in high-profile projects like PLATO and BepiColombo. Can you discuss a specific project where Madrid Space's expertise played a crucial role in its success?**

We are proud of our contribution to several high-profile mission but one of the best well known is JUICE (JUpiter ICy Moons Explorer). There, we took care of the thermal control of several instruments and sub-systems such as the Ganymede Laser Altimeter and the Solar Array Drive Mechanism. For the altimeter it was crucial that the transmitter and receiver remained at the exact same temperature in order to ensure the target measurement/optical performance. The system had an externally exposed aperture which needed to cope with extremely different environments: from the hot Venus during fly-by to the ice-cold Jupiter´s moon Ganymede. To this end, the thermal control strategy (isolation blankets, paints, heaters, etc.) was designed and tested with the ultimate goal of verifying the system thermo-elastic behaviour. Similarly, the solar array mechanism needed to cope with high power transfer from the solar cells during the parts of the mission that were closer to the sun and with the extremely low power transfer levels from the Jupiter region.

**What are some recent advancements or innovations Madrid Space has made in the field of thermo-structural engineering for space applications?**

Innovation is at our heart. We are pushing the boundaries of technology in the development of lightweight, high-strength components while improving thermal performance and durability. Our capabilities and know-how on integration of advance phase change cooling systems within 3D printed structures enhance thermal protection in almost any application but is especially relevant for high power electronics and spacecraft longevity. One of our most recent innovations is to apply an alternative manufacturing approach to satellite structural panels, replacing traditional aluminum honeycomb and CFRP skins with other materials to ensure demisability during reentry.

**How does Madrid Space ensure the quality and reliability of its hardware solutions for demanding space environments?**

We only work with suppliers ISO9001 certified. Our own quality system is deployed internally.

**What are the key trends and challenges shaping the space industry with regards to thermal management and structural design?**

Key trends in thermal management and structural design in the space industry include the increasing use of lightweight, heat-resistant materials to minimize mass while maximizing durability. Advanced composite materials and 3D printing are transforming structural design. Major challenges involve managing extreme temperatures in space, ensuring reliability under thermal stress, and developing efficient heat dissipation systems to handle the rise of high-power electronics.

**How does Madrid Space envision the future of heat pipe technology and its role in space missions?**

Heat pipe technology is essential for efficient thermal management in space missions, as it helps in transferring heat over large distances with minimal temperature loss. The future of heat pipes involves advanced designs, such as variable conductance and loop heat pipes, to handle higher heat loads from increasingly powerful spacecraft electronics. As space missions become longer and more complex, heat pipes will play a crucial role in ensuring system reliability, reducing overheating, and supporting advanced mission architectures.

**What are some of the potential applications for Madrid Space's thermally enhanced structures beyond traditional satellites?**

Our space cooling structures have the potential to be transferred to sectors in which low weight and high-power electronics are involved such as Defence, Avionics and Naval industry. We are currently starting a demonstrator for autonomous sub-sea vessels applications, where confined space make heat release strategies crucial for ensuring reliable operation.

SPACETECH IN GULF

ORBITAL EOS
Earth Observation Solutions

# Juan Peña Ibáñez

CEO & Cofounder
at Orbital EOS

In this interview, the Orbital EOS team shares insights into their cutting-edge oil spill monitoring solution, which has transformed how oil spills are detected, tracked, and managed. With a foundation in extensive experience from the Spanish Coast Guard, Orbital EOS has created a platform that combines AI, satellite technology, and predictive modeling to offer unparalleled efficiency and accuracy. From proactive surveillance to identifying sources of pollution, Orbital EOS provides a comprehensive solution for environmental protection in some of the world's most vulnerable marine regions.

**What differentiates Orbital EOS's oil spill monitoring solution from other methods used in the industry?**

Orbital EOS's oil spill monitoring solution was developed by our founding team, which has over 30 years of experience in operational oil spill monitoring with the Spanish Coast Guard. Our solution offers a 10-20x increase in cost efficiency compared to traditional surveillance methods that rely on vessels, helicopters, or airplanes.

Additionally, our platform includes the capability to run oil spill trajectory forecasting. These models use the precise shape and characteristics of the spill as detected in satellite images, resulting in significantly more accurate predictions.

**Can you elaborate on the specific types of radar and optical satellites your system utilizes for oil spill detection?**

We currently work with a portfolio of over 60 satellites. The combination of different satellites enhances the system's flexibility and adaptability, while also improving accuracy since each sensor type has its own strengths and limitations.

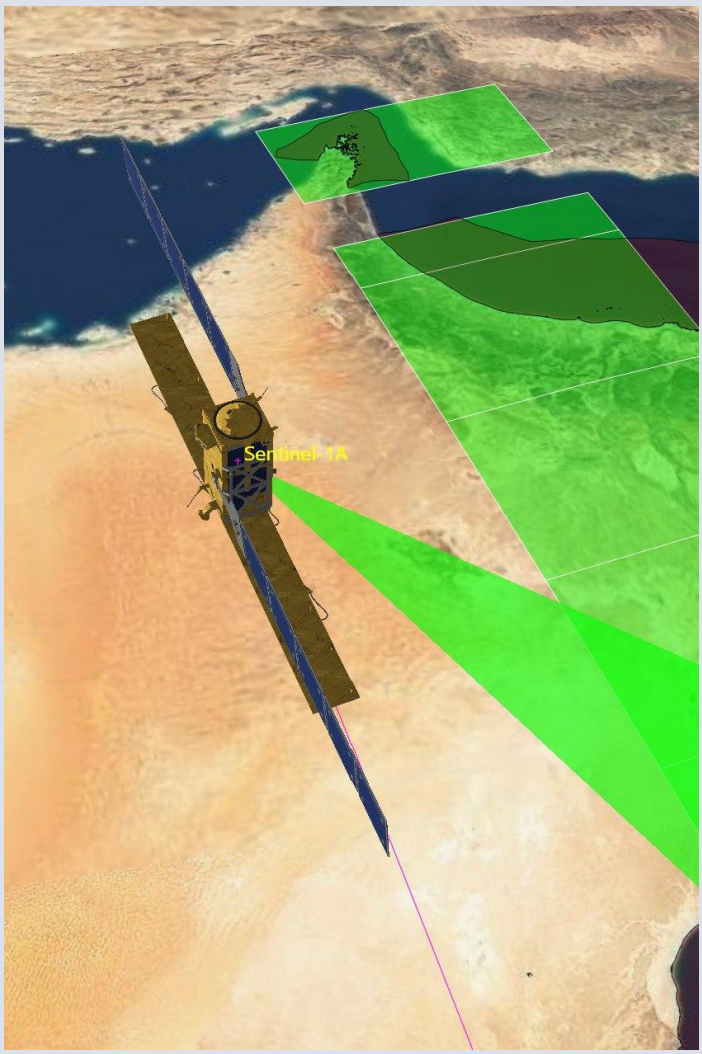
Synthetic Aperture Radar (SAR) sensors provide all-weather, all-time capabilities, as they can operate at night and through clouds. On the other hand, optical sensors allow us to quantify oil spills and detect them in more challenging conditions, such as low wind or areas near the coast where SAR may not perform as well.

**How does Orbital EOS ensure the accuracy and timeliness of data received from satellite networks?**

To ensure the accuracy of our detections, we conducted a six-month validation campaign in collaboration with the Fujairah Research Center (FRC) in the UAE.

During this campaign, satellite detections reported by Orbital EOS in UAE waters were verified by FRC using vessels to collect on-site photos and samples. Following this process, we demonstrated an overall accuracy exceeding 90%.

Regarding timeliness, we utilize specialized software to plan satellite acquisitions over designated areas, along with automation and AI to analyze images almost in real-time. Since 2019, we have supported multiple oil spill emergencies, delivering timely information to our clients to enhance their decision-making processes.




*Orbital EOS's proprietary AI algorithm analyzes radar and optical imagery from Earth observation satellites, enabling proactive and cost-effective surveillance of assets in remote locations.*

**What image processing and analysis techniques are employed by Orbital EOS to identify and monitor oil spills effectively?**

Our approach is rooted in both the fundamental physics of how oil behaves on the sea surface and our extensive experience in remote sensing. We've pioneered the development of an AI model that delivers performance comparable to that of a human expert in detecting oil spills in satellite imagery.

Additionally, we incorporate AIS data into the analysis, which allows us to identify vessels responsible for illegal oil discharges, ensuring these violations don´t go unnoticed.

**How does Orbital EOS's system promote proactive oil spill surveillance, and what are the benefits of this approach?**

Orbital EOS's system allows for continuous and real-time satellite monitoring, enabling the detection of oil spills even in their early stages. This proactive approach helps prevent spills from escalating into larger environmental disasters. By identifying spills sooner, authorities and companies can respond quickly, minimizing environmental damage, reducing cleanup costs, and mitigating reputational risks. Our platform also offers the ability to forecast the movement of spills, providing a critical advantage in preparing containment strategies and avoiding further contamination of sensitive coastal areas.

**How does your user-friendly interface facilitate oil spill monitoring, particularly for those without extensive remote sensing expertise?**

Our platform is designed with a user-friendly interface that simplifies complex satellite data, making it accessible to users without remote sensing expertise. With intuitive dashboards, clear visualizations, and automated reports, users can easily interpret data and make informed decisions. The platform also offers real-time alerts and integrates additional data, like AIS, to provide a complete picture of the situation. This ease of use enables quicker decision-making in critical moments and empowers a broader range of stakeholders, from environmental agencies to corporate teams, to engage in effective oil spill monitoring.

**Can you provide examples of successful cases where Orbital EOS's service has been used to detect and respond to oil spills?**

We are currently working with the government of Saudi Arabia on the regular monitoring of the Red Sea and Arabian Gulf. This system is the most advanced in the world in terms of coverage and frequency, allowing for prompt detection of oil spills and rapid response, significantly minimizing environmental risks.

Recently, we also assisted authorities in Oman during an emergency following the capsizing of an oil tanker in Omani waters. Our satellite technology enabled quick detection and assessment of the spill, which supported the authorities in managing the crisis effectively.

In the UAE, our collaboration with the Port of Fujairah has led to the successful detection of illicit oil discharges. Our satellite monitoring system helped identify the responsible vessels, providing crucial evidence for enforcement actions.

Our solutions have also proven critical during oil spill emergencies in Europe and South America, where we provided timely and accurate data that helped organizations minimize environmental impact and reputational damage.

**What types of reports or insights does Orbital EOS offer to clients using its oil spill monitoring solution?**

Orbital EOS provides comprehensive reports that include detailed satellite imagery, spill characterization, and the exact location and shape of the detected oil. Our reports also offer a confidence level assessment, which can be used in legal cases or compliance reports. In addition to this, we provide trajectory forecasting, which predicts the movement of the spill based on real-time data. Clients also receive information on potential sources of the spill, including vessel identification through AIS integration. These insights help clients not only respond to incidents but also support long-term monitoring and compliance strategies.

**What are the key challenges faced by the oil and gas industry in oil spill monitoring in the GCC, and how does Orbital EOS address these?**

The GCC region presents unique challenges for oil spill monitoring, including the vast maritime territories, high density of maritime traffic—particularly oil tankers—and extensive offshore oil production areas. These factors, combined with a complex geopolitical environment, significantly increase the risk of large-scale or catastrophic oil spills across many countries in the region.

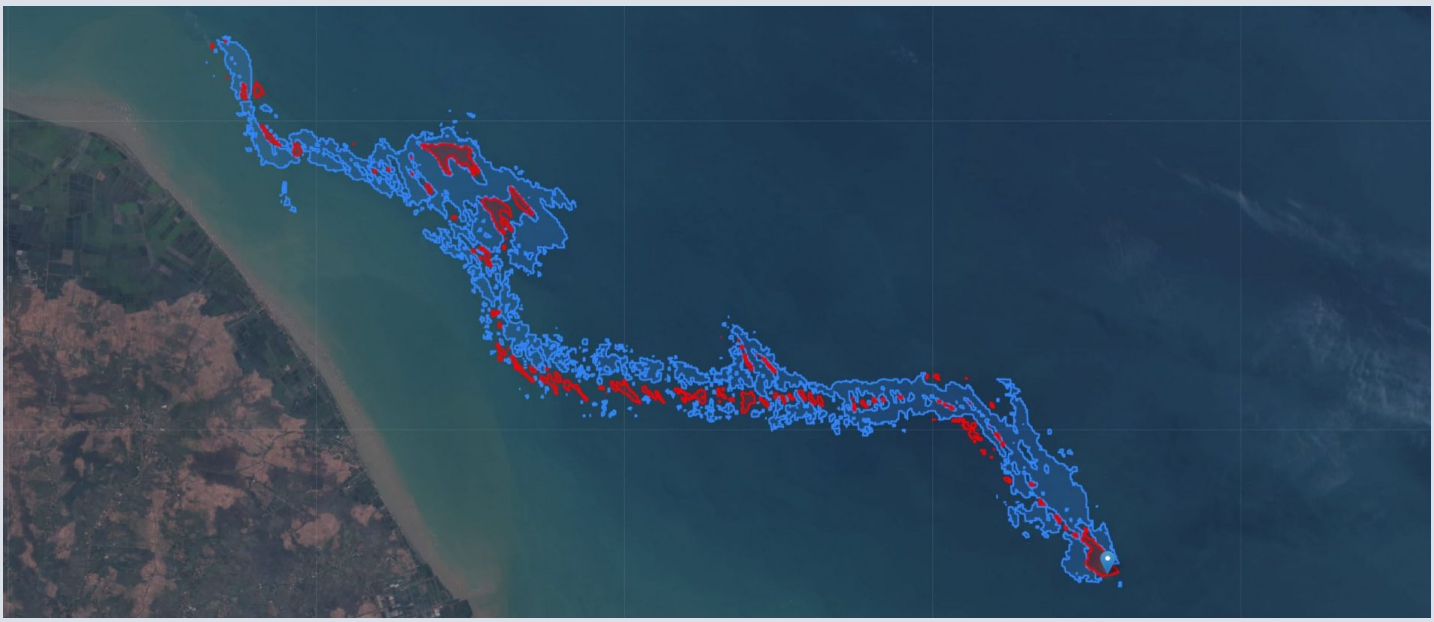
Orbital EOS addresses these challenges by leveraging satellite technology capable of monitoring large areas efficiently and continuously. Our combination of SAR and optical sensors ensures all-weather, day-and-night detection capabilities, crucial for such high-risk zones. In addition, our AI-driven analysis processes data quickly, allowing us to provide near real-time information to clients, which is essential for timely responses. By integrating AIS data, we also help identify potential culprits of illegal discharges, enabling swift enforcement actions. Our solutions provide a robust framework to monitor high-risk environments and mitigate the impact of oil spills in such a complex region.

**How does Orbital EOS envision the future of oil spill monitoring technology, and what advancements are on the horizon for your company?**

At Orbital EOS, we believe the future of oil spill monitoring will be shaped by increasing automation, predictive capabilities, and global coverage. We see a growing role for AI-driven analysis, where algorithms will not only detect spills more accurately but also predict potential spill risks based on maritime traffic, environmental conditions, and historical data. This will allow for preventive actions rather than just reactive measures.

One of the key advancements on the horizon for Orbital EOS is expanding our system's integration with more environmental factors, such as wind and current data, to enhance the precision of oil spill trajectory forecasting. We are also working on further enhancing the speed and efficiency of data processing to deliver real-time alerts and insights even faster.

Additionally, we envision expanding our global monitoring network to cover even more regions at higher frequencies, providing comprehensive coverage in areas of high risk. Our goal is to continue developing the most advanced, automated, and reliable oil spill monitoring systems in the world, empowering stakeholders to protect marine environments proactively.



# About SpaceTech in Gulf

**SpaceTech in Gulf** is the premier marketing, analytics, and space market intelligence company in the MENA region. We are dedicated to fostering a vibrant space community by providing strategic communication services and AI-driven market intelligence solutions. Our mission is to connect the rapidly expanding space ecosystem in the Gulf and MENA regions with local and international space communities, research centres and investments bodies through our advanced AI-powered data platform, empowering stakeholders to make informed, data-driven decisions and drive growth in the space sector.

Our services include proprietary analytics, comprehensive marketing support, and partnership management to help companies navigate the evolving space industry landscape. With deep insights into market trends and advanced data analytics, we enable our clients to make strategic decisions that drive growth and competitiveness. Additionally, our tailored marketing solutions ensure impactful brand positioning and visibility, while our partnership management services foster valuable connections across the space ecosystem, linking businesses with investors, research institutions, and other key stakeholders in the Gulf and MENA regions.

### Alexei Cresniov, CEO

Founder at SpaceTech in Gulf

United Arab Emirates / Moldova

Serial entrepreneur with six years of experience in managing companies, building IT and AI products, and extensive expertise in B2B sales and partnerships. Ten years of teaching experience.

### Abdullah I. AlGharrash, COO

Co-Founder at SpaceTech in Gulf

Saudi Arabia

Dedicated Saudi aerospace engineer and entrepreneur with extensive experience in the space and jet engines industries. Experienced in collaboration with national and international space organizations, committed researcher, and a published author in space applications.

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